

Actuary Reinvented - Strategic context for actuarial education

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1 Executive Summary

Successful actuarial education needs to be set in the holistic strategic context of the actuarial profession. Actuarial education, whether provided by professional actuarial bodies or other suppliers, should be determined by, and respond to, the evolving role and nature of the

actuarial profession. An education strategy implemented to be robust and ‘fit for purpose’ into the future is necessary for the long-term survival of the profession.

Professional actuarial education systems globally are in an increasing state of flux as new knowledge, applications and opportunities emerge for actuaries (and others). Changes are being driven by many things including, the rise of technology, globalisation and the development of other areas of knowledge and expertise that impinge on the traditional actuarial domains. The essential processes and challenges are the same around the world, even if the stages of development and immediate priorities differ. This is both an opportunity and a threat for the profession.

The challenges facing the Actuarial profession are not unique, in Roos (2006) writing in “Relevance and professional associations in 2026”¹, Page 15 identifies 10 threats to existing professional associations that are entirely relevant to Actuaries.

However, the need for flexibility to respond to future changes in the professional environment may be in conflict with the need to develop infrastructures and processes that deliver well-structured and effective education. This applies both at entry level and for life-long learning.

Education systems need both strategy and implementation. The strategy is necessary to provide direction, give an overview of desired outcomes, prioritise effort, and set expectations. Equally importantly, effective implementation requires infrastructure, processes, expertise and resources. The ‘machine’ of the education delivery system can become large, entrenched and lose agility. This can lead to tension between strategy and implementation where implementation constraints either limit, or force prioritisation, of strategic changes. However, it is important that strategic requirements drive educational delivery, not the reverse, and that the implementation work has clear ‘targets’ set by the education strategy.

Ultimately, an inappropriate education strategy, even if well implemented, risks inadequate or inappropriate outcomes and so risks not meeting the expectations of stakeholders.

A clear strategy is a key input to the education system. The implementation is the output. Outputs should be interpreted in the broadest sense, which informs the success of the profession. That is, of providing the services its users expect and value, rather than those they are given, that is, in a narrower context of educational content, of syllabuses, pass rates and the like.

Applying an investments analogy, the education system should be managed on a holistic, portfolio basis, rather than in terms of particular components of that portfolio, to provide optimal outcomes for the profession. The focus should be on optimising outcomes to members from the education system as a whole, not on optimising a particular aspect of it. For example, senior members writing exam questions or explaining a topic to a class are as much educating themselves, as they are educating the student.

We suggest there has been an over-emphasis on the implementation and delivery aspects of the education systems to entering students and an under-emphasis on the strategic direction

¹ See Guthrie, Evans, Buritt - <https://www.psc.gov.au/sites/default/files/Relevance%20and%20Prof%20Associations%20in%202026.pdf>

which would provide equal attention to the education and training of actuaries throughout their career and support greater diversity and inclusion. Many people we interviewed for this paper expressed frustrations with the current education system and that established deficiencies are slow to be addressed. The primary purpose of this paper is to provide a framework and process to redress this imbalance.

We focus on what an actuary is, in contrast to what an actuary does, and provide an actuarial value proposition for the users of actuarial services. The characteristics and value-add that set actuaries apart from others who provide the same technical services then emerge.

We recognise this may be a harder path to follow than staying on a more comfortable, established, traditional and narrower educational path with strong focus on traditional and regulatory work. It may challenge some widely held beliefs and attitudes and lead to some key paradigm shifts in perspective and approaches. It will need a stronger and more disruptive future vision and also need more courage to pursue. This may be a challenge for a profession that is not well known for its risk taking.

With the profession at a cross road, there is an opportunity for it to move from an inward to outward focus that facilitates the growth and diversity of the profession. This will emphasise its considerable and unique portfolio of transferable skills to provide a strong professional value proposition to a wide range of users. Clearly it is vital to never lose sight of the importance of professional standards and accreditation. We suggest this is the way forward for the profession to prosper and be vibrant, open and progressive and be valued by its users to help them address analytical and business problems they see as complex and difficult. This path needs to be supported by the emerging education strategy implemented in a way that remains robust and 'fit for purpose' into the future.

For many, particularly those outside the profession who may wish to join it, the education system is the 'front window' of the profession. Its structure, efficiency, effectiveness and access (flexibility, openness and response to diversity) are therefore key factors in the promotion and success of the profession.

We identify a number of current structural challenges and propose a number of key strategic solutions to underpin effective long-term education initiatives. These are necessary to support the development of a vibrant and successful global profession.

Current structural challenges include:

- The education system that has not kept pace with changing needs and demands of members and the users of actuarial services;
- The profession has limited resources and so needs to prioritise where its efforts are directed. It is at risk of reduced relevance for many members and actuarial students;
- Constraints within the current system prevent a complete re-design, so an incremental approach is needed. To make this effective, the long-term strategic goals and requirements of the education system need to be clearly identified.

Some key strategic requirements to underpin effective professional actuarial education are:

- Carrying out a high level strategic review with an external focus on the users of actuarial services;
- Pursuing a cultural shift to become strongly outward and output focused, not inwards and input focused is needed;
- Creating a clear Actuarial Value Proposition to satisfy ALL stakeholders, of whom the membership is one, is needed to provide direction;
- Clear articulation of the benefits of professional membership, focusing on standards of work and behaviour, public interest and disciplinary process is needed, particularly to retain members who take less traditional pathways
- Encouraging and attracting of new members and retain existing members, including the broadening of student entry backgrounds, supporting diversity and embracing new ideas;
- Ensuring the cost-effective delivery of professional education through the most appropriate and efficient providers. These include universities², overseas and other professional bodies and utilising expertise already established in other areas;
- Giving CPD and on-going learning as much profile and support as entry learning; and
- Supporting and encouraging serious professional thought leadership and academic research relevant to providers of actuarial services.

² For a discussion on the links between professional associations and higher education see Freeman and Evans (2016) in Guthrie, Evans and Burritt “Relevance and professional associations in 2006”
<https://www.psc.gov.au/sites/default/files/Relevance%20and%20Prof%20Associations%20in%202026.pdf>

2 Overview

This paper builds from our presentation at the Actuaries Summit of the Institute of Actuaries of Australia (the ‘Institute’) in May 2017 (see Traverso and Gribble 2017). The initial intention was to produce a paper to contribute to the Institute’s Education³ Strategy review process. However, it became clear early on that this review process should be approached holistically, not in isolation. By ‘approached holistically’ we mean both putting education as a key tenant of the Institute’s overall strategy and placing the Australia approach in a global actuarial context.

2.1 The challenge

The purpose and direction of the Institute’s education system needs to be clarified before any major changes to the existing education system can be made. The purpose of the education system should be driven by the strategic needs and directions of the profession. That leads to the core need to clarify deeper and broader questions that go to the heart of what it means now, and will mean in the future, to be an actuary.

That is, there is need to step back and see the bigger picture, identify the key strategic objectives of the profession, and then review and implement the education system so that it supports those objectives. Inevitably this top-down approach will take time. However, we suggest there is a major opportunity cost and potential high risk of pedalling harder in the wrong direction if this approach is not taken. We suggest the Institute should lift its eyes and review its strategic objectives before continuing to pursue the current direction.

2.2 Need to realign to current system

We are not suggesting the current education system is irreparably damaged. There are many positive aspects to it. We are, however, suggesting it needs to be realigned and revised and that ‘more of the same’ is not an appropriate approach. Some aspects should be critically reviewed to see if they remain fit for (future) purpose, some realigned and reprioritised, and some made more flexible, diverse, and accessible. We also identify some fundamental paradigm shifts that should be discussed and assessed to ensure the Institute, through its members, remains robust and ‘fit for purpose’ into the future.

The Institute’s recent review process acknowledged that the current education system needs change and there are wide-spread anecdotal reports of established deficiencies and frustrations with it. The system needs to be given direction on where and how to realign before approaching the challenge of moving towards them in a coherent way.

2.3 Framework to manage with

This paper provides a framework that supports a strategic, flexible and continuous process to give direction to the educational system and its activities. It necessarily takes a bigger

³ We use the word ‘education’ in the broad sense of supporting the initial and ongoing professional development of actuaries.

picture and top-down approach. We acknowledge that challenges will flow from then implementing the changes to correctly align the profession's education system.

This big picture perspective requires us to step back and consider what being a member of professional actuarial community means, both for individual members and for this community (as represented by the Institute). The profession is at a crossroads in its history. This provides an opportunity, now, to set the profession on a course to prosper and be a vibrant, open and progressive professional community in the future. One that is respected and valued for its capacity to help its users address analytical and business challenges that are seen as complex and difficult.

Conversely, if we do not face these core issues, the risk is that we become a dwindling profession that may become increasingly side-lined by others. In any changing environment, there are many opportunities for growth, but this necessitates a change in perspective and a ridding of old paradigms. We don't want to become an army⁴ of frogs in warming water (but who may not fully realise it).

2.4 Key paradigm shifts

The key paradigm shifts in mind set that we suggest are needed to support actuaries and their professional development are:

- Recognition that at its core the Actuarial profession is a global profession⁵.
 - There are country specific nuances and flavours, but that core should be recognised. Once accepted, this mind set will allow better use of International syllabi, will support international career moves, broaden mutual recognition opportunities and encourage diversity at both entry and mature levels of its membership
- Re-position core actuarial education as a 'foundation' analytical business education.
 - This can be applied in multiple domains, and improved by further relevant education. Financial risk management, with insurance as a core, will remain a key domain. But actuarial skills are transferable to other domains, and this should be recognised and fostered. This should also allow multiple and diverse entry and exit points to and from the profession. The profession can then grow and become more widely employed by new, non-traditional users of actuarial services and opportunities for more diverse actuarial careers become better supported.
- Orientate the key strategic outputs of the Institute to focus on supporting members finding sustainable employment opportunities into the future.
 - To support this, articulate a clear holistic strategic framework for the profession which provides a common language for discussion and to provide

⁴ See <http://www.thealmightyguru.com/Pointless/AnimalGroups.html>

⁵ In the Australian context, see <https://www.actuaries.digital/2017/11/27/introducing-the-new-international-committee-and-its-membership/>

multiple criteria to assess all Institute proposals against. A framework has longevity over transient individuals, and so supports effective and consistent long-term planning and implementation.

- To take full advantage of the diversity of membership and high level of connectivity between people, enhance the opportunity for all levels of members to participate in governance and strategic decision making of the Institute⁶

2.5 Some fundamental issues

However, before these issues are addressed we need to:

- Clearly define an ‘actuary’ with a clear articulation of what an actuary ‘is’ rather than what an actuary ‘does’;
- Differentiate actuaries from other analytical professionals;
- Provide a clear vision for key stakeholders in the profession, including users of actuarial services and employers. This enables strategic alignment and focus for a diverse range of educational activities that work cohesively and flexibly towards a common goal.

We propose that realigning and managing the focus, structure, composition and delivery of the Institute’s education system is fundamental to future success of the profession. A holistic framework to support this and addressing the key paradigm shifts is then necessary. It follows that a fundamental rethinking and review of the purposes and paradigms behind education initiatives is urgently needed.

2.6 Moving forward

In this paper we consider a number of strategic initiatives to put education issues into the holistic context described above.

- We investigate the core question of what an actuary is. We characterise ‘actuarial value’ as a focus for both over-arching strategy and education specifically.
- We provide a framework for setting strategic and education objectives. This provides a roadmap for reviewing and developing the Institute’s education system. This framework supports developing and managing a ‘fit for purpose’ education strategy. This then provides direction, cohesiveness and efficiency to the realignment of the current education system to support the long-term success and growth of the profession.
- We then make some more specific observations, applying the framework. We acknowledge that success requires ongoing effort and recognition of pragmatic

⁶ See page 29 of Guthrie, Evans and Burritt “Relevance and professional associations in 2006”
<https://www.psc.gov.au/sites/default/files/Relevance%20and%20Prof%20Associations%20in%202026.pdf>

realities. However, ideal solutions provide guidance and direction when ‘real life’ compromises, due to resource or other constraints, have to be made.

3 Context

3.1 We are at a cross roads

The actuarial profession, in Australia and globally, is at a cross roads in a rapidly changing environment. This is being driven inexorably by, amongst other things, the rise of technology, globalisation and the development of other areas of knowledge and expertise that impinge on the traditional actuarial domains.

In response, it can continue down a traditional, inward focused and narrower educational path with strong focus on traditional and regulatory work to provide guaranteed employment for actuaries. This inwards focused path may be more familiar, comfortable and ‘easy’. However, this carries the risk of self-justifying the typical technical stereotype with consequent risk of becoming a smaller, but increasingly compliance oriented profession. We recognize that in many countries statutory work as required by insurance supervisors is both a starting point and key current focus of the actuarial profession. However, we are not alone in believing that the actuarial profession has a great deal more to offer and should continue to develop into broader and more diverse roles. This progress to date is evidenced, for example, by the growing recognition of the actuarial skill sets in (enterprise) risk management and data analytics. However, the success of individual actuaries within Risk Management and Data Analytics has been achieved by individual efforts, rather than the profession as a whole promoting and supporting this diversity.

There is an opportunity now for the profession, as an Institute led body, to look outward and explicitly emphasis its considerable and unique set of transferable skills to provide a strong professional value proposition to a wider range of users. This move from inwards to outwards focus will also facilitate the growth and diversity of the profession, whilst never losing sight of the importance of professional standards and accreditation. This is a challenging path as it is less clear, will need a stronger leadership and a more disruptive future vision, and will take courage to pursue.

The balance between the statutory work and ‘wider fields’ varies considerably between different jurisdictions. In Australia, the dominance of the ‘statutory castle’ has, for a long time, been declining in relation to the growth of the profession into other domains. In other less developed markets, the demand for actuaries to work in insurance regulatory capacities is strong, and the need to build core capability a primary focus.

It is unfortunate that the Australian education system has had a single-track evolution and is still strongly focused on senior statutory roles. We suggest this is inconsistent with the future market needs and sends some discouraging and potentially misleading messages to those with broader interests whom we want to encourage to join or remain in the profession. The education system should be realigned to take advantage of all emerging opportunities (which will continually arise).

Additionally, as technology develops rapidly it is vitally important that high standards of technical competence and the development of robust actuarial thought processes is maintained and continuously enhanced.

3.2 Change is unrelenting

The continually changing working environment for actuaries is a strategic challenge, both in general and for education. Policies, processes and procedures that are put in place now need to be flexible, resilient and responsive. This means that changes are likely to need to be paradigm shifts in how we should proceed compared to incremental improvements that are easier to implement.

Strategically, this unrelenting and increasingly fast paced change drives the need for principle based not rule based approaches. While a principles-based strategy should provide a more flexible and long-lasting framework they also require more thinking, judgement and experience to effectively implement. There are of course times when, for clarity and precision, rules are needed. From an implementation perspective, there are major challenges as developing, maintaining and governing infrastructure is not easy and it can be insidiously hard to resist the solidity of entrenched views, people and processes.

Countries with an Actuarial profession and financial/insurance market that is in its infancy have the opportunity to leap frog development stages by taking advantage of the talents that exist in more developed economies. If there is more emphasis on universal and globally recognised 'whole of life' education, then the profession can become a key part of international capability building.

Overall, the urgency for constructive lateral thinking is becoming more acute.

3.3 Issues to be addressed in an education strategy

The following are the specific issues that we have identified that relate to the profession as a whole, the challenge for education is to reflect them in both initial and ongoing development decisions. They should be taken as an integrated whole and not in isolation, to maximise the synergies that arise between the parts.

- **Balance and focus.** There is currently too strong an emphasis on traditional actuarial technical training, with insufficient on acquiring additional new techniques, and developing noninsurance applications of the actuarial skill set. There is a lack of support provided for continual education and development. However, the role of the Institute is to focus on core actuarial skills and manage the outsourcing of the rest to those who have more technical expertise
- **Skills based.** Education should be skills based, not domain based. i.e. note the Australian success of principles based not rules based regulatory structure
- **Holistic.** Management and interpretation, breadth and perspective. More emphasis on developing interpretative skills and how to provide recommendations to users – that is the actuarial value i.e. helping make better business decisions. A cohesive strategic framework reduces the propensity to operate in silos.

- **Outward looking.** Take a user needs perspective. Ask the right questions from the point of view of the user, not the deliverer. Move away from automatically assuming that the Actuarial qualification provides automatic acceptance of advice by stakeholders.
- **Diversity and inclusiveness.** Providing sufficient support and flexibility for all forms of diverse career paths, moving away from the singular career/education path. Encourage diversity of thought and background
- **Benefits of membership.** Clarifying exactly what value professional membership provides, and why someone should join and stay
- **Size of profession.** Recognising the small size of the profession and constraints of being a member organisation. For example, by enhanced co-operation and sharing of resources with other national actuarial bodies, international institutes and the International Actuarial Association.
- **Branding and promotion.** How a profession can articulate and positively promote its brand more broadly to its key constituencies. How individual members of the profession can effectively promote themselves and their skills.

These points provide a potential set of criteria to assess education initiatives against.

3.4 Role of the education system

A key 'use test' of an education system is its employment outcomes. There are diverse stakeholders whose perspectives should be represented in a discussion of the strategy of an education system and structure. Key stakeholders include:

- Users of the education system, including both new entrants/students and experienced actuaries;
- Users of actuarial services including employers and government; and
- Providers of education services.

Clear, high level, strategic objectives of the profession should drive its education system to give that system a purpose and direction. Delivery depends on both the strategy itself and policy decisions guiding it, and the tactics, effectiveness and flexibility of the supporting infrastructure. We also need remember that the education system is the servant of the profession.

The system that delivers actuarial education is a very 'public' face of the profession. Actuarial education reflects the past heritage and learning of the profession but, equally, it needs be forward looking. In an uncertain world, the need is to prepare members, incoming and continuing, for their future careers and opportunities. The challenge of delivering effective, flexible and relevant education is real and difficult, particularly for a small body with limited resources and very real constraints⁷. The pace of change is unlikely to slow down, and the level of disruption will surely increase. Success may require increased focus on the

⁷ See Du, Whiting and Bruhn 2017 '*Views of educators on the education system*'

future and should challenge established views and paradigms. We will need to step back and see the big picture before we step forward.

4 The actuarial ‘package’

4.1 Key aspects

The actuarial package has several key parts and they all need to function together for success of the profession. This is a situation where the whole is greater than the sum of the parts since a critical aspect is the interactions between the parts. We identify four key parts:

- Actuaries. That is, the individuals who provide actuarial services to the users of those services.
- Actuarial bodies. That is, the organisations that actuaries belong to and obtain their professional accreditation and status from. In Australia, the main body is the Institute. However, others, such as supervisors, may also have a role to play.
- Actuarial service users. That is, those who use actuarial services. This includes but is not limited to, employers.
- General public. That is, indirect users or beneficiaries of actuarial work and services. The general public may often be represented by government bodies or agencies and be presumed to act for the general good⁸. More broadly, the profession has a concept of ‘serving the public interest’ explicitly stated in its Code of Conduct.

We noted previously that a key ‘use test’ of the education system is its employment outcomes. More broadly, the ‘use test’ of the profession is how effective and valuable the advice provided to users by the profession is seen to be.

We proceed by looking at what an actuary is, the role of actuarial bodies, and the actuarial value chain and culminate with an Actuarial Value Proposition (AVP). The AVP could be seen as a high-level vision or mission statement for the profession. All activities can then be assessed in terms of how they support its attainment.

4.2 An actuary

The question of how to define, or even describe what an Actuary ‘does’ is one that has given many people all over the world cause to struggle to come up with the right words. We suggest this perspective may be limited though focusing on actuarial outputs, such as ‘determine liabilities for ...’, ‘calculate premiums for ...’, ‘build a model for ...’. Focusing on specific outputs can hide the multiple skills needed to accomplish them and mask the reality that these skills are transferable.

We suggest it may be more productive to focus more directly on identifying what an Actuary ‘is’ and the set of skills actuaries have. We should move the focus away from just the set of

⁸ An example of this is maintaining appropriate exemptions from discrimination laws to permit underwriting of individuals for life insurance to reflect things like gender, age or smoking status.

tools in the actuarial tool box to what they may construct with those tools, and the value that output provides to its user. This then puts us in a better position to differentiate the actuarial skillset from other analytically based professions. That is, we are better placed to answer the question of *'Why should I use an actuary to ...'* with a *'Because they have the following integrated set skills needed to ...'* (which others do not). To date the profession has sometimes had difficulty with these issues. Further, and importantly for an outward looking perspective, this approach permits us to search for new applications in term of the skills that actuaries have that can be applied to new areas.

We are suggesting there needs to be increased emphasis on the set of skills actuaries have, rather than on what specific things they can do with them. This is not to belittle those things, and in some cases, particularly in more traditional and statutory focused areas, actuaries may be a specifically or uniquely qualified to perform those tasks.

A simple example of this change in paradigm is changing from 'I computed best estimate liabilities of ...' to 'I applied my professional experience and judgement to determine best estimates of key inputs for a liability calculation. These best estimates were then used in the calculation of the (best estimate) liabilities for ...'. The focus has changed from the output of liabilities to the skill of determining best estimates (which then happened to be used as part of a liability calculation).

Actuarial education should, of course, provide a solid foundation of technical and analytical skills. However, these skills by themselves may not be adequate. They should be supported by other key actuarial attributes of judgement and materiality, integrity and ethics, communication and interpretation, intellectual exchange with the broader business and academic community, and business acumen. To draw these two dimensions apart we refer to the technical and analytic skills as 'Technical' and the other skills as 'Professional'⁹. Then once the acquisition of core 'Technical', and 'Professional' skills has been attained, the core competencies of the foundation level 'actuary' is set. From here, there is scope to pursue further study. Often the education system focusses on further Technical skills but puts them within the narrower constraints of specific disciplines such as General Insurance, Life Insurance, retirement incomes, data analytics, marketing analytics, risk management, etc. Our research indicates that there is a strong and urgent need for an increased emphasis on further Professional skills. We believe we are not alone in this viewpoint. We appreciate that this may be a challenge for the profession and require paradigm and attitude shifts, however that does not change the urgent need.

The traditional approach to education has been that the only way to obtain a qualification is to pass through a linear, standard, education system. This can also focus more on the output itself, rather than on the deeper and transferable skills applied in their execution. For example, applying different valuation approaches and investigating their differences and so relevance. In this the more transferable skills may only be developed implicitly by example and on personal reflection by individual students. We suggest that in a fast-changing world a more inclusive, flexible and outward looking approach may be more appropriate and contribute to growth. If the profession is to grow and will be encouraging diversity in the

⁹ A more descriptive name would be 'Professional and Business' but this is too cumbersome. So, we use the shorthand of 'Professional' with the understanding that, for the purpose of this paper, this includes 'Business'.

pathways of new and continuing members, then the delivery of education and content (especially CPD) should reflect this.

In summary, we suggest the education system should:

- Increase its emphasis on identifying broader transferable skills and separate these from the specific technical output skills and methodologies taught; and
- Be more flexible and provide alternative qualification routes to the typical linear standardized education path currently in place

We propose the focus should be on acquiring a holistic and flexible actuarial skillset that is adaptable to a range of alternative pathways.

This can be looked at from a portfolio perspective. Each of the Technical and Professional dimensions identified above can be thought of as having two major levels. First there is the necessary level of acquiring a collection of tools that can be used. This provides the developing actuary with a workshop and a knowledge of how to apply each individual tool in specified circumstances (based on examples given when learning about the tool).

The next level is that of combining outputs from various tools. This include deeper insight in knowing when to use which tool and in what order when addressing a problem. At this level higher skills including managing a problem solving process (not just executing specific components), synthesizing outcomes from various tools, recognizing higher order interactions (complexities, consequences and non-linear leverage), resolving apparent inconsistencies, and managing and tailoring work and effort to the objectives, scope and timeframe of problems come into play. At this level the breadth of knowledge and capacity of developing actuaries to see links and interactions starts to develop. At this level the key unique skills and value proposition of 'being an actuary' develops. At this level the transferable actuarial skill can develop. To illustrate, In the technical example above about valuation and best estimates, it is here that the synthesis and abstraction from the specific circumstance of a valuation towards the general and transferable skill of setting best estimates occurs.

We suggest that identifying these transferable skills is an important part of identifying the unique things the distinguish actuaries from other technicians (who may be just as good at using specific tools). A further key aspect of this is that actuaries bring and apply their higher order skills as a package: that is, they bring a portfolio of skills to bear. It is the ability to offer a highly skilled portfolio approach that provides the uniqueness of actuaries, more than any specific individual skill. That is, 'the whole is greater than the sum of the parts'. Each of the parts is needed, but it is how they are combined that provides the key to the robustness and insights of the outcomes.

Building this 'portfolio skill' should occur both within the Technical and Professional dimensions of actuarial education and between them. The continued development of these higher skills then forms part of ongoing, continuing CPD. However, the development of these skills should be made explicit, so included in the education program, and not left to emerge implicitly by some form of personal osmosis from other experience. There is the important element of reflecting on professional experience gained over time in developing and honing these skills. The importance of taking a portfolio approach and extracting transferable skills

is clearly demonstrated when reading advice offered by experienced actuaries who have moved into management positions.

We do not presume to have a comprehensive list of these higher order transferable skills, or actuarial paradigms to provide. However, we offer some initial suggestions to promote further discussion. See also Gribble 2011 and Gribble and Sarukkali 2017.

Technical actuarial paradigms (not in order of importance):

- Understand equity. At a macro level, over time and between groups.
- Apply judgement. In the choice of tools and have a 'sense of consequence' when interpreting their outputs.
- Take a long-term perspective
- Assess and manage inadequate or incomplete data and its consequences
- Quantification. Develop, manage and apply models. (Often, but not necessarily, assessing financial impacts.)
- Understand materiality. In the context of the matter at hand.
- Set assumptions. Understand 'best estimate' and margin.
- Apply structured analysis
- Synthesize information. Extracting higher order outcomes and implications.
- Assess and manage future uncertainty
- Apply unbiased professional judgement
- Apply the 'Actuarial control cycle' process

Profession actuarial paradigms (not in order of importance):

- Act in the public interest
- Uphold the reputation of the profession and abide by relevant Codes of Conduct
- Are individually accountable for their professional actions and advice
- Conform with professional and other required standards and legal obligations
- Take responsibility for effective communication of outcomes and their implications for users of their services.
- Cooperate with other professionals in good faith and transparently (including take-over of services from other actuarial service providers).
- Respect confidentiality
- Manage both real and perceived conflicts of interest
- Appropriately disclose remuneration
- Apply personal integrity and profession skill and care in their work
- Understand the scope (and client expectations and capacity) of task tasks undertaken

- Understand and manage the limits of their competency and experience
- Maintain their professional and technical currency of knowledge

A very high-level summary of this could be ‘know your client, know the rules, and know yourself’.

For clarity, we note that if work is considered to be outside the experience and/or skill set of an individual this does not automatically prohibit that work being pursued. Rather, it means that appropriate assistance, guidance and review need to be sourced from others to safeguard the interests of the users of the services, so they are comfortable that appropriate professional actuarial services have been provided. Such support includes mentoring (both formal and informal) and peer reviews (both formal and informal).

4.3 The actuarial profession

A key way that actuaries do differentiate themselves from other analytics professionals is by belonging to a recognised and formal ‘profession’ (see Bellis 1998) that is responsible for enforcing behaviour via a disciplinary process, managing an education and professional development process, and deciding upon and maintaining high professional standards, thereby providing members with a ‘raison d’être’.

A further analysis of this concept is provided by Gribble and Sarukkali 2017 and reproduced with permission below:

At its core, professionalism focuses on the ‘how’ of the conduct of actuarial activities, not the technical ‘what’ of the outcomes. It is entrenched in the values the profession and its members hold in common. This separation of the ‘how’ and ‘what’ is a key characteristic of a profession. A way to characterize this is to suggest that what distinguishes professions from each other and from other occupations is their values, as represented through their professionalism.

This is typically encapsulated in a professional code of conduct which all members of a profession are expected to abide by and there is a discipline process in place to deal with breaches. This differs from professional technical standards which provide guidance on requirements and process needed apply technical skills and to generate outcomes.

The key characteristics of a profession include:

- *Licensing or Accreditation of both a*
 - *Professional body, and*
 - *Individual members*
- *Having the key characteristics of*
 - *Developing and maintaining a recognised body of specialised knowledge. This is almost always formalised through specific qualifications.*
 - *Public interest. This is a difficult term to define clearly even if we may have an intuitive feel for it. It focuses on protecting the interests of groups as opposed to individuals and carries an element of responsibility of those who*

have expert knowledge to apply their knowledge and influence in ways that do not disadvantage those who do not share that expertise. It applies to both the profession and its member individually. It is intimately tied to the issues of ethics and personal integrity.

- *Providing unbiased advice to the users of services provided by a member of the profession*
- *Independence. In particular, this implies the need to recognise and manage real and perceived possible conflicts of interest in a transparent of forward looking way.*
- *Members have individual ethics and personal integrity*
- *A defined Code of Conduct which all members are expected to abide by*
- *Clear disciplinary procedures which address possible breaches of the Code of Conduct*
- *Management and execution of an appropriate education and professional development process*

There can be a balance of competing forces for both the professional body and its members in satisfying these requirements. These tensions need to be acknowledged and managed. While there may be some loss of individual member autonomy, this is more than compensated for by the benefits of membership to the member, both directly and more broadly through being a member of a publically respected profession. This highlights the importance of perceptions and reputation, both for and by individual members and the professional body as part of maintaining public respect and trust.

If being ‘part of a profession’, with its incumbent responsibilities, is one of the actuaries’ key differentiating features, then its value should be championed and publically promoted. But does the public view Actuaries as “Professionals”? In a recent report by the Professional Standards Councils¹⁰, Actuaries were viewed as ‘an Association Group’ alongside Financial Advisers and Tax agents. Part of this public promotion could involve becoming members of the Professional Standards Council. The profession’s over-arching strategy and objectives enshrined in those responsibilities must drive its education system and validate its capacity to deliver high quality outcomes. See Harvey et al 2014 (page 27).

There is a distinction between the responsibilities individual members of the profession have to themselves, their colleagues and to the professional body; and those that the professional body has to the key stakeholders interested in the profession and the services and value it provides. These varying relationships, perspective and interactions should be clarified and strategically managed.

Although we have touched on multiple facets to be addressed for the profession as a whole, we focus our attention on how these should be addressed in the education system.

¹⁰ “The Professionalisation of financial Services” Page 11 –
http://www.psc.gov.au/sites/default/files/NEW-PSC%20Whitepaper_final.pdf

4.4 Actuarial value - for users of actuarial services

To demonstrate the applicability of actuarial ‘value’ to numerous domains and settings, we describe the Actuarial value path below.

This brings together some established actuarial concepts and provides a roadmap of a process that can be used those providing actuarial services. It is thus an ‘internal’ to the profession’s process and approach. It is worth noting that users of actuarial advice may be less interested in the process used than the provider of that advice. Of course, there is always the need to use, and to be able to demonstrate use of, due process and review to substantiate the validity of the advice provided.

A domain independent approach to the process of the ‘Actuarial Control Cycle’ is to have two separate cycles. We note this approach to the control cycle makes it clear that it is a process, (and we suggest should be a core actuarial paradigm), to be applied in multiple and diverse areas.

The inner cycle, the Analytic cycle, is centered on ‘building a model’ (where model is interpreted in a broad way) and includes three steps:

- Identify / Specify, Solve, Monitor.

The focus of this cycle is on Technical skills.

The outer cycle, enclosing the Analytic Cycle, is focused more on governance, interpretation and communication. It consists of 4 steps:

- Risk, Professionalism, Environment, Implementation

The focus of this cycle is on Professional skills. While is easy to say, it is a fundamental strength of a cyclic approach that it repeats (and is not linear and so comes to an end). The two mutually supportive components of the actuarial control cycle are deeply embedded within the profession. Annual Financial Condition Reports are a legislated example. See also Gribble 2011 and Gribble 2006.

These can be put together, applied to problems and are part of a path to deliver actuarial services to users and support their business decisions. This delivery path can be summarized in a diagram, as below, and be read from the top to the bottom.

Diagram 3.4.1: Actuarial value delivery path

Assess symptoms and identify the issue / opportunity
= Apply Actuarial tools + Develop model
+ Analytic cycle
= Govern model + Actuarial paradigms
+ Professional cycle
= Actuarial control cycle
+ Apply to financial services
= Actuarial control
+ Actuarial capabilities and experience
= Actuarial practice
+ Deliver relevant, timely, respected advice to users
= **Actuarial value for decision makers**

Actuarial value is not perceived as just being applied to insurance or financial services but it is an entire toolkit of skills, values, judgements and applications that provide unique, holistic, analytical and business value to a broad range of industries. The holistic approach and value differentiate the profession from others. Actuaries can then be viewed as the conductors of the orchestra rather than one of many different instrumentalists.

4.5 An Actuarial Value Proposition

We suggest we need a clearly defined 'value proposition' for the profession. This provides a high-level vision or mission statement for the profession. All activities can then be assessed in terms of how they support its attainment. See also Gribble 2017.

It needs to be appropriate to an outward looking organization. It needs to stand the test of time as it is a 'target' we set ourselves to strive towards. It should be simple and resonate both internally (to actuaries) and externally (to users of actuaries). It needs to support and remain relevant to actuaries and users of actuaries when they work in new and 'non-traditional' areas.

A clear value proposition will support the development of an education system that will enhance the profession both qualitatively and quantitatively. Education, both at initial and/or entry level and ongoing continuing professional development (CPD), is part of the overall actuarial value proposition of the membership, from both an individual member view, and as a membership body facing inwards and outwards to the users their services.

We suggest that an Actuarial Value Proposition may look like this:

Actuarial Value Proposition (AVP): *Actuarial value is delivered to a recipient of actuarial services when that recipient:*

- *Has their reasonable expectations met with unbiased advice on events that lead to uncertain outcomes;*

- *Has the advice effectively communicated in a way that supports the recipient making better informed business decisions; and*
- *Has confidence that the advice provided has been arrived at by an individual who has sufficient education and experience to make that judgement and is bounded by a code of professional conduct.*

The words ‘reasonable expectations’ implies agreement on what they may be and also implies discussion prior to delivery to establish that. It assumes that the definition of “Actuarial value” is clear to all parties.

We make some further observations about the AVP:

- The first bullet point refers to uncertain outcomes. To evaluate advice there needs to be some way of comparing alternatives. Typically, we expect this comparison will be done from a financial perspective. However, this is not a necessary requirement and using other criteria may also be appropriate.
- The third bullet point refers to professional actuarial judgment. Almost all actuarial work involves building and using a model of some type (ranging from the ‘simple’ thought model through to very complex ‘numerical’ models). Models are abstractions and approximations of reality. Their building, use and interpretation requires judgement and insight at all stages. In this sense, actuarial judgement is inherent to all actuarial work. See Gutterman 2017.
- Actuarial value may be delivered to individuals or specific clients, or to wider groups.
- Actuarial value may be delivered by individual actuaries or the profession (for example public policy contributions)
- The focus is on the ‘ends’ not the ‘means’. That is, the focus is on the use of the services and advice not the means and methods by which that advice is derived. High level technical competence is required of course, but the ‘use test’ of that work is how effective and ‘fit for purpose’ the advice provided is, as viewed by its users.
- The word ‘unbiased’ carries with it professional obligations and connotations about independence, appropriateness, communication of uncertainty and alternatives, peer review and the like, of the advice.
- The focus on outputs permits a distinction between carrying out technical work and the management and interpretation of that work. In some cases, it may be that the most valuable actuarial contribution lies in the application of higher level, interpretive and judgement related skills. This may permit a wider and more lateral range of possible career solutions to be considered.
- The specific reference to communications and a clear implication that this should be in terms that are familiar to the recipient to support the ultimate objective of recipient making better business decisions.

- The clear distinction between the provider of the advice and the recipient, who is making the business decisions based on the advice received.
- The word 'complex' does not appear in the AVP. This is because complexity is, at least in part, a value judgement. The key issue is if the user of the actuarial services perceives the issue being addressed as being complex, not if the provider of the actuarial services does. Typically (perhaps excluding statutory requirements to obtain actuarial input) this may be the case as otherwise the user could have addressed the matter themselves and not sought actuarial input.

4.6 Multiple stakeholders

There are multiple stakeholders to whom this AVP applies. Different stakeholder will have differing objectives and may be expected to have differing 'reasonable expectations' of actuarial services provided. Some services may not be relevant to some stakeholders and so it is not relevant to consider their 'reasonable expectations'. Multiple stakeholders may also be interested in specific actuarial services.

A high-level set of stakeholders includes:

- Members (and aspiring members) of the profession
- Clients and users of the profession's services (such as employers and other professions)
- Providers of services to the profession (such as professionals from other disciplines and education providers)
- Industry members and bodies
- Supervisors, and
- The public and particular groups (such as insurance policyholders or retirees)

The Actuarial Value Proposition is domain agnostic. It therefore includes current activities of the profession and its members and includes future activities in new areas. It focuses on the transferable skills need to manage and communicate outcomes with users of actuarial services and assumes that the technical skills required to support that are present in the background. It has the capacity to support the profession moving forward including into new areas.

4.7 A small global profession

The actuarial profession is both global and small.

Recent International Actuarial Association (IAA) data, IAA 2016, shows there are less than 100,000 Fellows of Fully Qualified Associations practising. Putting this into a global context is interesting. There are about 15 million doctors (and still not enough), over 5 million accountants, over 5 million lawyers and over 7 million engineers globally¹¹. There are both benefits and risks in being so small. On the benefit side the professional actuarial

¹¹ Data sourced from Google searches, 2017.

community is strong, supportive and well integrated and promoted by the IAA. On the risk side, to use an analogy, the profession may be a mouse in a room full of elephants. The risk is that even a very clever mouse, if trodden on by an elephant is still a squashed dead mouse.

We need to recognise the limitations of the small size of the profession and particularly aware of the need and benefits of being efficient and effective as a global profession. An illustration of this is the growth of mutual recognition between actuarial bodies. Another is the establishment of the global CERA Global Association (<http://www.ceraglobal.org>) and CAA Global (<http://www.caa-global.org>) initiatives.

The profession is also quite international. The most recent (2016 and 2017) annual reports of some of the major actuarial bodies indicate significant international presences of their members: These results are to illustrate a point, rather than be precise. Note ‘members’ is total membership reported.

Table 3.7.1: A global profession

Body	Total Member	International proportion
Casualty Actuarial Society (2016 Annual Report)	7,343	16% (of which 10% are in Canada)
Institute and Faculty of Actuaries (2016/2017 Annual Report)	28,950	46% (of which 37% are outside Europe and the UK)
Institute of Actuaries of Australia (2016 Year in Review)	4,706	22%
Society of Actuaries (2016 Annual Report)	27,770	32.5% (of which 17% are in Canada)

4.8 The education process as a foundation and pathway to higher learning

Historically and currently to an extent (decreasing in Australia) the use of actuaries is mandated by law or regulation.

As noted earlier, the Australian education system remains primarily focused on senior statutory roles. To continue to educate via the single path without providing opportunities to develop and use the unique actuarial skill set in a variety of contexts, limits the appeal of the profession to future analytically minded individuals, and limits the potential of those already engaged within it. In a changing environment where membership is often seen as necessary only if one wants to ‘sign off’, there is a danger that the profession “Actuary” will shrink.

There is a unique and fast disappearing opportunity now to reinvent the profession to ensure its continued value and relevance, and to stimulate membership growth. It starts with education and the attitude we present it with.

An educational paradigm that focuses solely on acquisition of technical skills and their specific outputs misses some critical and fundamental points. We do not wish to dilute the importance of technical skills, and indeed we suggest that they should be enhanced to better reflect new technologies and market requirements. Outputs are only valuable to users if they understand their implications and interpretations in their own context. Complexity is in the eye of the user, not the provider of (actuarial) services. Professionals other than actuaries may also be able to do the necessary (complex or not) calculations. The key test for the actuarial profession, and its individual members, is whether the recipients of their advice are better informed and so make better decisions. They should be able to articulate and demonstrate why actuaries should be trusted more and used instead of other technically trained service providers. This is embedded in the AVP, reflects directly on the quality of the education system, and being part of a profession.

Clarifying the AVP around the Institute's education process is therefore central to all activities. Australia has an export actuarial education industry which heightens the profession's responsibility to develop and maintain good and capable actuarial resources.

The current review of the Australian actuarial education system is an opportunity to enhance the profession now and into the future, not just in Australia but also globally. However, there is also a risk that if it is not done well, with courage and vision, that it will be detrimental to the profession. Rather than 'tweak' the existing design, it is time to start with a blank sheet of paper and ask:

- What are the skills the future actuary (once defined) needs to acquire and then maintain and enhance?
- What should the Institute do to guide, administer and regulate actuarial education and ongoing professional development?
- Which organisations are best placed to deliver each of the different aspects of the new education and CPD requirements?
- What material is already available from elsewhere and can be 'Australianised'?
- How does an education system speak to the Actuarial Value Proposition for all stakeholders?

Consideration and clarity around these outward focused objectives are key to ensuring the qualitative and quantitative growth of the Institute's membership.

We need to clarify and promote the value of the actuarial perspective and brand by looking at the transferable skills and perspectives that actuaries have but their competitors do not.

- Previously the actuary has come from a place where the 'hard' or technical skills were focused on, and there was little time or inclination to develop 'soft' skills. The aspiring Actuary now needs to develop equally as strong 'soft' skills as they do technical skills. The technical skills provide a necessary condition for actuarial success, but the 'soft' skills provide a sufficient condition for that success.

- Actuaries' strengths are in providing broad based advice, multiple perspectives, judgement, materiality and equity. Additionally, there are also two key fundamental and distinguishing aspects to the actuarial tool kit – professionalism and ethics. These provide the answer to the question of what is the right thing vs. what is possible. They help actuaries, meet their public interest obligations to answer not the questions of 'could I do it?' but 'should I do it?' These can be difficult and ambiguous issues to deal with but are part of belonging to a respected Profession.
- The importance of joining and maintaining membership of a respected professional body and what that means to the users of actuarial services and the member themselves needs to be clarified and communicated.
- The current focus on entry level education via University with less emphasis on ongoing learning is a key area of concern. If the view is taken that core actuarial studies are a foundation on which continuing ongoing specialisation is built, then CPD should be enriched and enhanced to develop broadening opportunities. (See Lowther and McMillan 2014)
- The current education process provides little support for multiple entry or exit points that would enhance diversity in the profession in all its forms.

4.9 The role of research

The link between education in the sense of delivering knowledge to learners and research is strong and necessary. Education in this sense presumes the knowledge to disseminate is available, while research is about getting new knowledge or using existing knowledge in new ways. Research is therefore critical to the long-term success of an education system that can progress and respond effectively to new knowledge and conditions as they emerge.

We are using the word 'research' in its broad sense. Specifically, it is not limited to publishing academic papers in academic forums. This is not to say that this type of research is not important as clearly it is. However, it is to say that from the perspective of a profession, there is more to research than this. It is key hallmark of profession that it holds expert knowledge, generate new knowledge, and is recognised for doing so.

Currently there seems to be no avenue for research and discussion at a professional level that retains a permanent record of both the outcomes of pieces of research and the discussions that contribute to it, inform it, and disseminate it. The Australian Journal of Actuarial Practice, our professions journal, seems to have recently published its last edition. The profession does not appear to have an alternative or replacement for it. Although the recently launched "Dialogue" will go some way towards filling this gap, it is not the complete answer. We suggest this lack of suitable research media is a cause for concern.

4.10 Strategic focus

There are many influences and perspectives at play when setting strategic objectives. Following on from earlier, we suggested that all strategic objectives seek to realise an aspect

of the AVP for some set of stakeholders. We provide a framework in which this can be managed in the following diagram.

We reflect the separation of the roles of individual members of the profession and the profession itself. We also separate the role of the profession between internal (to members) and external (to other stakeholders). Some additional text is included in anticipation of later discussion.

Diagram 3.10.1: Individual and professional roles

	Individual member	Profession: To members	Profession: External
Education (initial & ongoing, technical & professional, direct & lateral)	Obtain Retain	Delivery Transferable skills	Give / take credit Professional diversity
	Currency of knowledge	Research Dialogue	Recognise other research Environmental scanning
Professional Advice	Competent, unbiased, independent Peer review Innovation	Professional Standards Interact with other professions	Influence other standards (supervisory) Consumer interest
Public interest	Conduct Ethics & Integrity	Guidance & support Profile of profession	Public policy and advocacy Thought leadership
Users	Receive actuarial value Timely and relevant advice	Recognition Create opportunity	Understand market and identify key stakeholders Promotion (why use actuaries)
Professional Body	Acknowledge Pride to belong	Relevance Accreditation of members Code Conduct & Discipline process	Public recognition and trust Influence and reputation

5 Framework for education discussions

We provide below a framework which can be used to assess each aspect of the education system and assess how it fits into the overall strategic plan.

5.1 A Challenge

We start by acknowledging the impact of smaller membership numbers. It is a reality that this may impact the provision of education and the support of an attractive on-going career:

For a small profession with limited resources we face the ultimate Catch-22 – How do you grow a membership and professional community that remains relevant in an environment that promotes the value and diversity of the actuarial skillset, when the necessity of belonging and gaining qualifications is increasingly questioned by members?

The desire to belong and contribute to the profession, by those who are involved with it, is strong. It is often observed by others that the willingness of actuaries to contribute on a volunteer basis to their profession is remarkable. This makes it clear there is a great deal of pride and commitment that goes with belong to the Actuarial Profession. Therefore, growth of the profession is linked to education and clear articulation to potential new-comers of the value of being a member. We should therefore concentrate on the education process and any mechanisms we can use to enable the inclusion of others into our qualifications who arrive by other routes. We have traditionally taken the approach that the only way to obtain a qualification is to pass through a linear, standard, education system. We suggest that in a fast-changing world a more inclusive, flexible and outward looking approach may be more appropriate and contribute to growth.

We should be encouraging talented people into our profession, not putting unnecessary barriers in their path. The challenge is how to do it. If the profession needs diversity of thought, how do you attract new people from outside the ‘maths’ team into it, who still have sufficient capability to pass exams?

To be successful, we need to prioritise limited resources and focus on the core things that create effective and ‘future-proof’ actuaries. We should be pragmatic and utilize other expert resources where we can to husband our resources for the key things.

We also need to consider how an education system fully permits cross accreditation between associations around the globe to assist with international career migration. For example, the development of mutual recognition and accreditation at the Associateship level should be more explicit.

5.2 Key aspects

To visualise how each of these elements fit together, we provide a simple framework by splitting actuarial education into three aspects:

- Timing - Entry and ongoing. It is one thing to gain access to the profession by qualifying, but it is another continue developing and life-long learning is vital to remain a competent and contributing member of the profession.

Actuary Reinvented – Strategic context for actuarial education

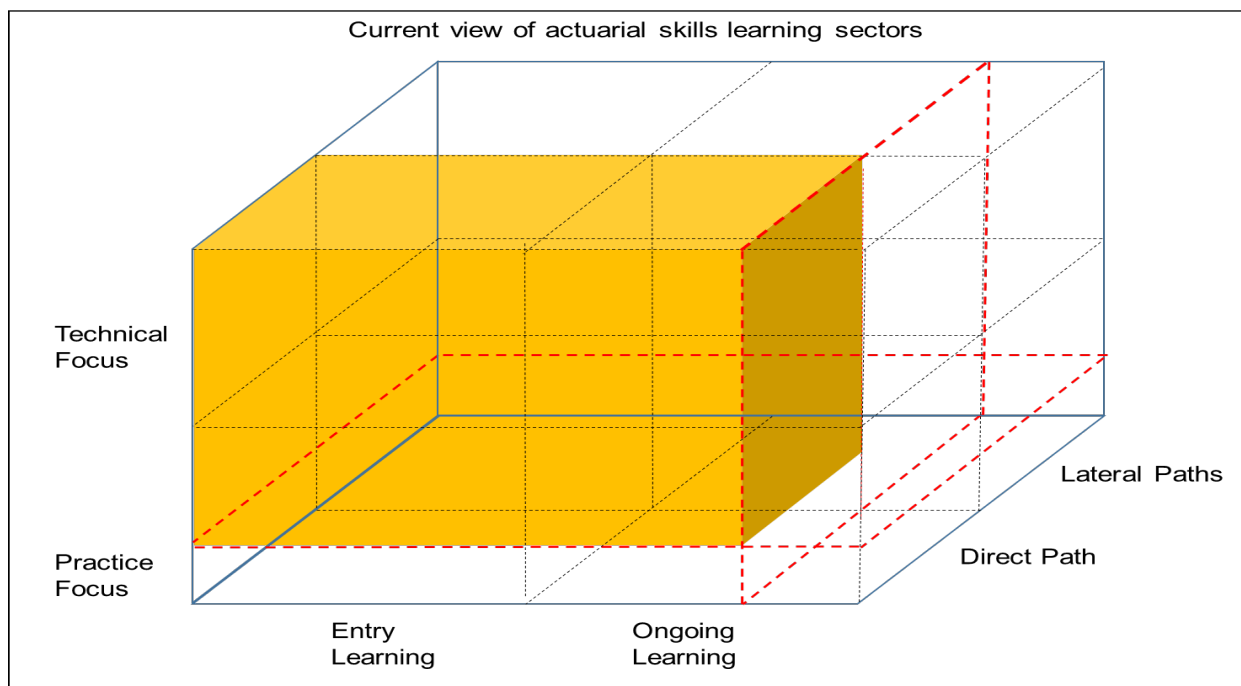
- Focus - Technical and practice. This separates the traditional formal more mathematical and related knowledge on one hand and the professionalism and the application of that knowledge through the services provided to users on the other hand.
- Path – Direct and lateral. The direct path is that of going to university after leaving school, taking a degree with actuarial courses and exemptions (potentially for all Part I and Part II subjects) and then continuing with the Institute's distance education for Part III. Lateral paths effectively cover all other potential avenues. Currently these do not seem to be very available and are not much discussed. In a world that is flexible and evolving, and relevant skills to contribute to a successful actuarial career may be more widely accessible at varying times during a working life, we suggest this a significant omission and a limitation on attracting good candidates to the profession.

This framework puts a structure around the components that make up an education and career development system.

The diagram below puts these three aspects onto the three axes of a cube and indicates our assessment of where the current educational focus is. We suggest there is an overemphasis on the entry aspect of education; there is an overemphasis on the technical aspect; and there is an overemphasis on the direct (standard) path. We suggest these imbalances should be redressed.

This is a bigger and deeper task than simply reviewing Part III courses and considering alternate ways to deliver the same materials, although we understand that was an urgent need.

Diagram 4.2.1: Current focus of education efforts



The oversized orange shaded area indicates the current focus of education and shows that the balance, focus and underlying paradigms need urgent review and adjustment.

5.3 The need to prioritise

We have established that the profession globally, and so also by jurisdiction, is limited in size and so in terms of human resources, relative to other established professions, by a factor of approximately 100.

This limitation drives the need to focus resources where they are most needed and so to prioritise activities, especially in the education context. We have also established that the key education focus should be on those things that uniquely identify what actuaries are, in contrast to other providers of technical services. The actuarial value-add, as perceived by users of actuarial services, is the key to long term success for the profession.

Small size and limited resource also drives a need for efficiency. This in turn implies a need to identify what can be outsourced and managed, drawing on the more widely available expertise, in contrast to what may be aspired to be done 'in house'. There is a clear challenge, and need, to ruthlessly focus on the things that are core to being and developing actuaries and not be side-tracked into trying to do things that others can do well, and then competing with them. The non-essential things should be outsourced, especially in the context of entry technical education as this is not where the core actuarial ethos and mind-sets develop. This requires clarity about what is, and is not, actuarial 'essence' and thereby delivering on the Actuarial Value Proposition.

The need to prioritise and be efficient should be approached from a portfolio management perspective reflecting the profession as a whole. This may have wider implications than just the direct issues being considered, and so requires balancing of competing needs and benefits.

The Australian Institute, like most other actuarial associations, relies heavily on volunteers to support its activities. As we noted previously, the volunteer ethic is very strong in the profession and this is a wonderful thing, almost to the point of being a distinguishing feature of the profession compared to others.

At first sight it may not seem 'efficient' to be continually recruiting (to replace departing) resources to support education delivery. We all know from our own experience, both receiving and delivering education materials, that delivering clear and effective education material may not be as straightforward as it may appear. Some expertise is needed to write good, balanced, fair and clear material and questions (and sample responses). To repeatedly train new people to do this could be argued to be more repetitive than efficient. However, the value of having smart and willing volunteers should be acknowledged and the challenge of how best to utilise and direct them taken up.

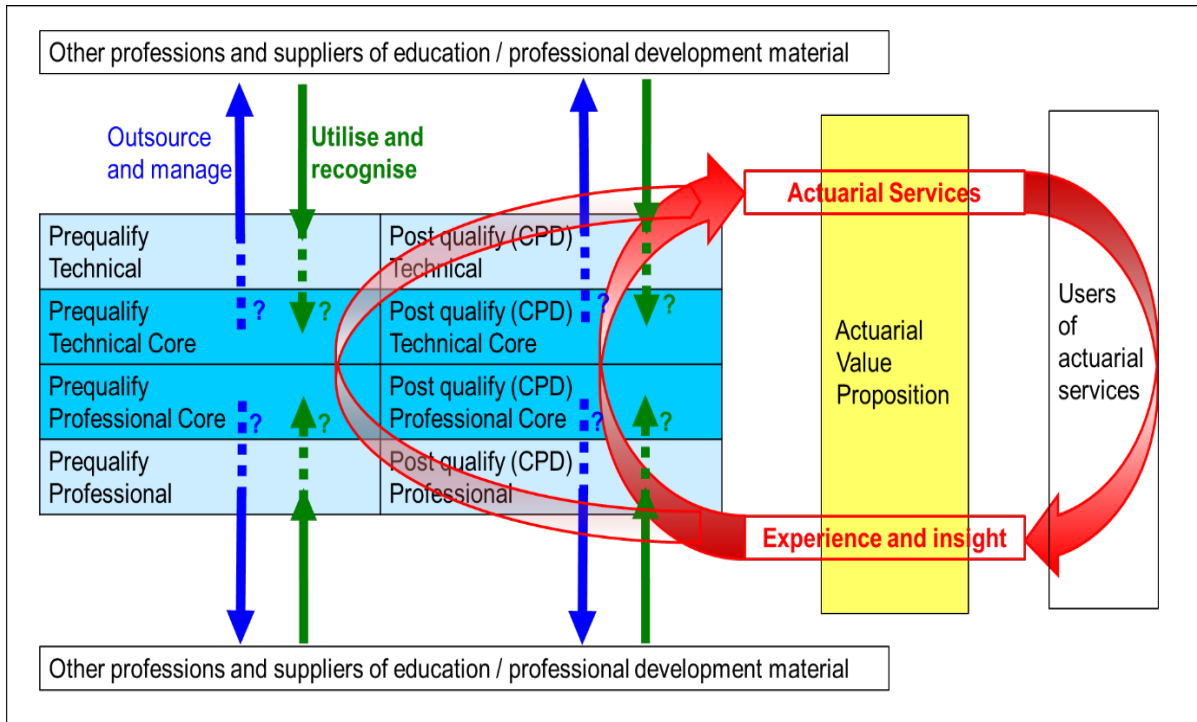
But, from a portfolio perspective there are other things to consider. There is an education (CPD) benefit to those volunteers who support the education delivery to students. There are 'belonging' to, and 'ownership' benefits, of the profession to those volunteers and a wider understanding of the challenges and opportunities of participating in the professions education efforts. These efforts should be viewed in the wide context of both entering and ongoing education. So, there is a need to balance potentially competing interests and benefits to optimise the overall portfolio outcomes for the profession and its members. Taking a broader perspective may be more challenging and may raise the need to review entrenched attitudes and interests, but in the longer run it should also benefit the profession.

In summary, the profession needs to keep control of its essential characteristics and features – its 'essence'. The rest can be outsourced as in this context it is 'commodity'. So, it needs to be clear what its essence is. This is driven by the answer to the 'why should I use an actuary' question and then successfully delivering the Actuarial Value Proposition to users of actuarial services.

The following diagram encapsulates this and reminds that the focus should be on delivering the Actuarial Value Proposition, as judged by the users of actuarial services. That is, is the 'use test' for the profession, as given in section 3.1, successfully passed?

Diagram 4.3.1: Priorities and links

Actuary Reinvented – Strategic context for actuarial education



Every arrow in this diagram drives a question about priorities, focus and resources. Each should be addressed, remembering that it is part of an overall portfolio.

5.4 The future balance

We would aspire to give equal weight to all eight boxes in the education framework. Each have their own challenges and may need different solutions and approaches to success. Each of them needs a separate strategic review and assessment of by whom and how this education is delivered. Each is likely to be different, and each is likely to change over time at different paces and in different ways, but always remaining true to the Actuarial Value Proposition.

We also suggest that parallel and integrated success in all eight aspects is a necessary condition for the long-term survival and prosperity of the profession. Specifically, and immediately, this raises the profile of CPD and its delivery.

If this premise is accepted, we suggest that it both broadens the debate on what actuarial education (both entry and ongoing) is to achieve and provides a high-level framework in which this debate can constructively take place.

The key focus is to achieve the best overall outcome, via a portfolio approach, for the profession, its members and its users. The risk of seeking to optimise one part of the framework at the expense of others and the overall outcome should be acknowledged and confronted.

We suggest that the review of the education system should address these issues. We acknowledge that this may mean a deeper rethinking. Additionally, the reprioritisation of

resources and direction may be required. Pragmatically that may then mean a staged approach with transition periods while a longer-term program for revision is put in place.

6 Application

We have suggested in this paper that the operation of individual activities of the Institute need to be aligned with the overarching strategy. We have also provided a framework which demonstrates that the current actuarial education activities are heavily weighted (Diagram 4.2.1, in yellow) towards entry level learning, a linear career path, a technical focus.

To enable us to use the tool to ensure that Actuarial education is aligned to each of the Institute's strategic objectives, we need to apply the tool for each Goal and make decisions accordingly.

6.1 An example

For example, consider Goal 2 from the Strategic Plan 2018-2020 section 3 which is to "Grow the profession and increase diversity in membership and volunteer engagement". By defining 'diversity' in its broadest sense, i.e. beyond gender, we can use a diversity lens to ask questions about any education review and its proposed outcomes. We can then plot the desired result onto the framework.

For example:

- How can we ensure that more lateral paths to qualification are established to support parents who wish to take time off to raise families?
- How can we support people who wish to make a career change into actuarial who have strong qualities but are put off by the emphasis on the technical skills?
- How can we support mid and late career Actuaries who want a change of direction?

This exercise can be repeated (and in more depth) for each strategic goal to establish the level of alignment that the Education Review has to the Strategic Plan. This process is clearly widely applicable as all that is needed is the strategic goal on one hand and the review outcome or current activity on the other.

6.2 A template to use

To support the application of this work we provide a simple template in Annex 1 that can be used to summarise the assessment of education practices and initiatives against the key criteria of the framework. This is intended as a summary document. More detailed supporting papers should be referenced as appropriate.

The Assessments should be structured so a consistent approach is used and seen to be used. The suggest assessments be made using a simple 5 point scale, with accompanying summary rationale. A score of 5 would reflect a criteria being very well met. A score of 3 would represent a criteria being 'adequately' but not fully, met. A score of 1 would represent a criteria being very badly addressed (but still relevant). A score of 0 could be interpreted as

the criteria not being relevant. The summary score would then represent a weighted average over the individual criteria scores. This could be made explicit by assigning weights that vary by issue being considered, to the individual scores. Alternatively, it could be done more informally and implicitly. It is our experience that the process of explicitly assigning scores and weights can be valuable in structuring and clarifying discussions and drawing out issues and differences.

This summary document should not be interpreted as making a decision. Rather it should be interpreted as providing structured information that supports better decision making. It may be that there are criteria in addition to those listed that may also impact decisions. For example, there may be external constraints or legal matters that need to be recognised.

7 The future professional

The future professional actuarial services provider needs to be technically well trained, professionally effective and deliver the unique actuarial value add to their users. They should be proud to be actuaries and both support and benefit from the high regard the profession is held in. The profession needs to deliver flexible, current and effective education to its members throughout their profession lives. This should recognise what is uniquely actuarial in actuarial work and conduct. It should also benefit from leveraging from and participating in a broader knowledge-based community in an increasingly interconnected world.

The framework and processes outlined in this paper, effectively implemented in a holistic and portfolio focused way, will support this. The starting point is a clear education strategy. This then needs to be implemented in a holistic and portfolio focused way.

The profession, through its members, then benefits from the widespread and rapid development of technical knowledge whilst retaining the essence of being actuaries. This supports retaining and enhancing the high regard the profession is held in. It also supports the Actuarial Value Proposition by characterising what sets actuaries apart from other 'technicians'. Users of actuarial services then benefit from broader access to a skilled, professional and flexible workforce that is better equipped to apply its actuarial skills in new and current environments.

We have outlined many challenges. We suggest that, in this time of review of both Australian and international education requirements and needs, acknowledging and addressing them provides an opportunity to renew and refresh. Successfully addressing these challenges gives the opportunity for some constructive, even if hard, paradigm shifts in how we prepare and position the profession and its members for the future. We need to make some fundamental changes so that the frog that is in the water with rising temperature gets out of the water and takes a bigger picture perspective. The frog may then need to get back in the water, but with a better understanding of the water and adequate protection so that it can continue to prosper.

We suggest some fundamental rethinking and review of the paradigms behind education initiatives is needed. We appreciate that implementing these proposals entail changes in underlying paradigms, perspectives and processes and so may be perceived as contentious by some. We appreciate our approach may be seen as harder, less comfortable and

possibly even somewhat threatening by some compared to a shorter-term reliance on past practices, attitudes and processes. 'It ain't broke so don't fix it' implicitly relies on the future being as the past. We do not think this underlying presumption is valid. We have provided several examples of how deep discussion, change and paradigms shifts may need to go.

We do not apologise for taking a long term future/success oriented approach. However, for it to succeed, we also want to promote constructive and informed debate. We believe this paper starts along that path. Our central concern and objective is to assure the long-term success and sustainable growth of a vibrant, relevant, sought after and respected actuarial profession.

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Annex 1: Template to assess education practices and initiatives against the strategic framework

Topic	Description
	xxx
Criteria	Assessment
1 Actuarial value proposition	Xxx
2 Benefits of membership	Xxx
3 Diversity and inclusiveness	xxx
4 Balance and focus	xxx
5 Skills based	xxx
6 Holistic	xxx
7 Outward looking	xxx
8 Size of profession	xxx
9 Branding and promotion	xxx
Summary	Xxx

Scores of integers between 1 and 5 are assigned and supporting summary rationale provided. A score of 1 means a criteria is very badly addressed and a score of 5 means a criteria is very well addressed. A score of 0 means the criteria is not relevant.

The Summary reflects a weighted average score. And summary observations and, as appropriate, recommendations. It is recommended that weighted average be made using explicit weights chosen for the topic under discussion (with explanation)

Supporting documents are referenced as appropriate.